

NATIONAL SCIENCE FOUNDATION – TOKYO REGIONAL OFFICE

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Japan's Comprehensive Strategy on Science, Technology and Innovation

Prime Minister Abe launched what is known as “Abenomics” to expedite economic growth by means of monetary and fiscal policies immediately after assuming office in mid-December 2012. On the understanding that S&T would be the primary driving force of economic growth, the Council for S&T Policy (CSTP) established the Comprehensive Strategy on Science, Technology and Innovation and announced it on June 6, 2013.

The comprehensive strategy was prepared in order to cope with such issues as the rapidly declining population and the consequent aging of society; the fast-moving globalization; global problems of energy, climate change, water, food, terrorism, infectious diseases and population; changes in the global economy; and the prevention and mitigation of disasters.

The five priority areas in the above strategy are energy, long and healthy life, the next-generation infrastructure, local area resources, and recovery and reconstruction following the Great North-east Earthquake in 2011. The timeline for the commercialization and implementation of these technologies is specified in the comprehensive strategy. Tables 1 to 5 below list the goals for each priority area, but not the details of the technologies involved.

Also emphasized in the comprehensive strategy is the importance of fostering an environment for innovation that facilitates the nurturing and kick-off of commercialization. In order to realize said technologies, it is imperative that systems for personnel training, competitive funding, industry-university-government collaboration, researcher mobility, research support, and the support of new industries are improved. It is also necessary to encourage international innovation hubs, deregulation, international standardization, and the development of intellectual property rights. A few examples of these improvements are:

In an effort to recruit world-class researchers domestically and from overseas, personnel and salary systems will be reviewed and revised, introducing annual salary system in place of current monthly salary system. Mobility and stability of employment of young researchers will be enhanced by encouraging universities to form university consortia.

The present competitive funding systems are also required to be reviewed in order to realize a transition from basic research through to commercialization, eliminating the barriers between ministries; focusing funding; and keeping the indirect cost at 30%.

As milestones, the numerical target for the percentage of women researchers at universities and public research institutions has been set 30% by 2016 from the current 24% at universities and 21% at public research institutions. The percentage of foreign researchers working at Japanese world-class research institutions will be increased to 20% by 2020 and then to 30% by 2030 (from 3.9% in 2010). The number of academic large-scale collaborative research projects will be doubled by 2030 (from 700 in 2011). Also to be doubled are the number of collaborative projects of more than three years, and the number of foreign patent applications.

More authority will be given to CSTP as the “control tower” of S&T in Japan to make all of the above realized. CSTP will establish an S&T Budget Strategy Committee to set a strategic S&T budget. In cooperation with industry, university, and ministries, CSTP will have a fund for the implementation of cross-ministry and agency programs. CSTP will also create a program that will succeed the FIRST (Funding Program for World-Leading Innovative R&D on S&T: thirty ~\$30million/5 years grants funded from the 2009 economic stimulus package) program. Furthermore, the function of the Cabinet Office that presently works as the CSTP’s secretariat will be enlarged in order to be able to act as a think-tank. Additionally, CSTP meetings will be activated, held more regularly than present and coordinated with the activities of the Prime Minister’s Strategy Councils on IT, IPR, Marine, Space and Medicine.

The STI Strategy is a long wish-list. Programs and projects based on the Strategy are expected to appear in the JFY2014 budget. It will be a real challenge to turn CSTP into Japan’s control tower for S&T. The NSF Tokyo Office will follow up the development of these activities.

Table 1: Energy

Goal	To be attained
Commercialization of a floating marine wind power generator	2018
Reduction of solar energy power cost to below Yen 7 (0.07 USD)/kilowatt	After 2030
Commercialization of 1700°C-level gas turbine and super-supercritical pressure steam power	2020
Advancement of efficiency and durability of fuel cell	By 2030
Commercialization of carbon dioxide separation, capture and storage	2020
Power electronics devices market to grow Yen 20 trillion (200 billion USD)	2030
Decrease the amount of, and make more efficient use of, rare earths for motors	By 2030
Lightweight automobiles and airplanes by use of innovative materials	By 2030
Decrease the use of rare earths for structural materials	By 2030
50% of the Yen 20 trillion (200 billion USD) world storage battery market	2020

Table 2: Long and Healthy Life

Goal	To be attained
Minimize the difference between 'long and healthy life' and average length of life	By 2030
Longer average length of life	By 2030
Decrease the age-adjusted cancer death rate	By 2030
Decrease the burden on the cancer patients' families and quality improvement of the medical treatment	By 2030
Promotion of the handicapped to participate in social activities	By 2030
Increase the number of approved regenerative medicines	By 2030
Expand regenerative medicine market from Yen 9 billion (90 million USD) in 2012 to Yen 1 trillion (10 billion USD) in 2030	2030
Strengthen the international competitiveness of medical products, medical equipment and regenerative medical care	By 2030
Increase international cooperative clinical research and trial	By 2030
Increase Japan-oriented innovative medical products and equipment	By 2030
Innovative medical technology development and evaluation guidelines	By 2030
Decrease industrial accidents	By 2030
Healthier workers	By 2030
Expand the IT-used and area-based care	By 2030
Improve Activities of Daily Living (ADL) and Quality of Life (QOL) for the elderly and handicapped and decrease the burden for caregivers	By 2030
Develop the industries involved in Body-Mass-Index and other at-home health-care equipment	By 2030
Expand the welfare robot market to Yen 400 billion (4 billion USD) in 2035	2035
Decrease the number of teen-age suicides and improve the index for obese children	By 2030

Table 3: Next-generation Infrastructure

Goal	To be attained
Low-cost infrastructure	2030
Domestic market of Yen 200 billion (2 billion USD) maintenance robot industry	2035
Domestic market of Yen 320 billion (3.2 billion USD) 'response robot at disasters' industry	2035
Decrease traffic jam to 50% of 2013	2020
Traffic accident deaths to be less than 2,500	2018
Big-data market of Yen 10 trillion (100 billion USD)	2020
Contribution to economic growth through advancement of information security	By 2030

Table 4: Local Area Resources

Goal	To be attained
To drastically shorten the breeding period for improved agricultural, forestry and fisheries varieties from the current 12 years to 4 years	2020
Advancement of livestock productivity	By 2030
Creation of new market that focuses on functional agricultural, forestry, and fisheries products (e.g., agro-medical foods)	By 2030
Development of technologies to save energy and advance agricultural, forestry, and fisheries products (Halving the labor costs in land-extensive farming)	2018
Technology development for high yield and high profit	2015
Commercialization of fully cultivated eel and bluefin tuna	2020
Plantation of 1,000 young least-pollinosis-causing cedars	2017
Flexible manufacturing even for small amounts of products in local areas	By 2030
Promotion of local industries by use of service engineering and new value creation	By 2030
Flow of talented people, products or services, and capital by vitalizing local-area economy	By 2030
Contribution to the economic growth by vitalizing local-area economy	By 2030

Table 5: Recovery and Reconstruction

Goal	To be attained
Fast and appropriate medical care for the victims	2015
Next-generation energy project for reconstructing Tohoku area	2018
Prevention of the secondary damage such as fire at industrial facilities	2018
Revitalization of highly competitive agriculture, forestry and fisheries	2014-2015
Creation and expansion of employment at disaster-affected areas by strengthening industrial competitiveness using innovative technologies and local-area strengths	2018
Low-cost anti-liquefaction measurement	2018
Reduction of tsunami damage by geographically designing the cities	After 2018
Advancement of the building strength against disasters	2015 or 2018
Fast and smooth processing and efficient use of the huge-volume disaster wastes	2015
Correct information with quick and appropriate advice when earthquakes occur	2015
Fast and correct tsunami information when it occurs	2015
Preparedness for fast and appropriate evacuation methods	2018
Fast and appropriate life saving at disaster sites	2018
Establishment of fast and appropriately-functioning distribution system	2015
Robust information gathering and distribution system	2015 or 2018
Reduction of the residents' anxiety on radioactive substances' health effect	2015 or 2018
Radiation prevention for the contamination site workers	2015
Efficient and effective decontamination and processing	2015
Fast measurement and evaluation of radiation in agricultural, fisheries and industrial products	2015